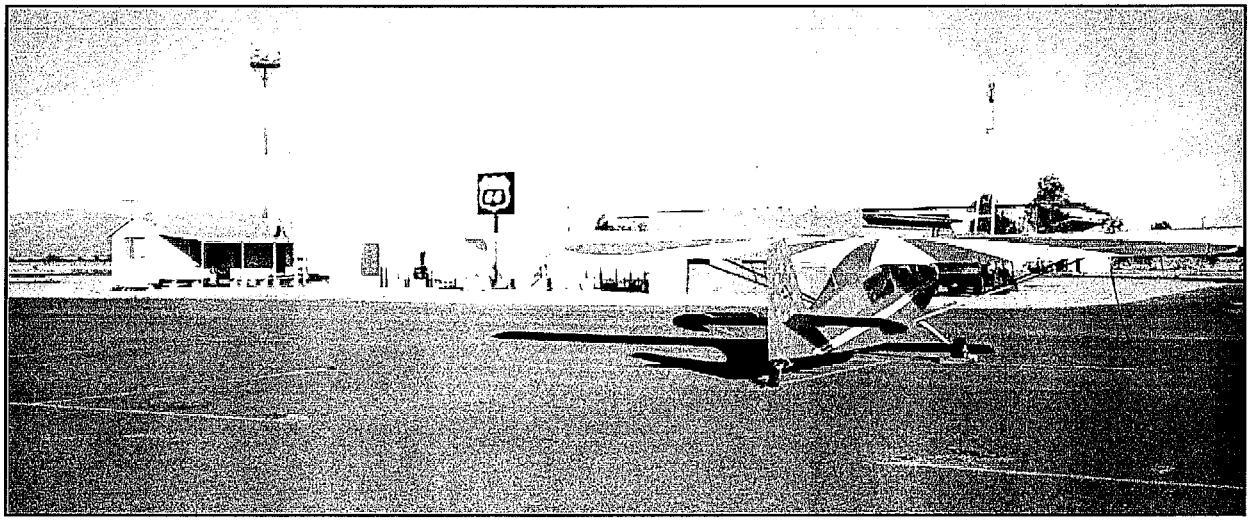
Chapter Four
DEVELOPMENT ALTERNATIVES

Chapter Four

DEVELOPMENT ALTERNATIVES



The previous chapter identified airside and landside facilities required to satisfy the demand for the long range of the planning period. The next step in the planning process is to evaluate the several ways these facilities can be provided. There are countless combinations of options, but the alternatives presented are those with the greatest potential for implementation.

Any development proposed for a master plan is evolved from an analysis of projected needs for a set period of time. It cannot be assumed, however, that future events will not change these needs. The master planning process attempts to develop a viable plan of action for meeting the needs caused by projected demands for the long range of the planning period. However, no plan of action should be developed inconsistent with the goals and objectives of the Town of Buckeye and area residents that have a vested interest in the results of development at the airport.

The development alternatives for Buckeye Municipal Airport can be categorized into two functional areas: The airside (airfield) and landside (general aviation hangars, apron, and terminal area). Within each of these areas, specific facilities are required or desired. In addition, the utilization of the remaining airport property to provide revenue support for the airport and benefit the economic development and well-being of the Buckeye area must be considered.

Each functional area interrelates and affects the development potential of the others. All areas must, therefore, be

examined both individually, and coordinated as a whole to ensure the final plan is functional, efficient, and cost effective. The total impact of all of these factors on the existing airport must be evaluated to determine if the investment in Buckeye Municipal Airport will meet the needs of the citizens of the community during and beyond the planning period (approximately 20 years).

When analyzing alternatives for development, consideration must also be given to a "do nothing" or "no build" alternative as well as the possibility of removing aviation services altogether. As these alternatives are not without major impacts and costs to the public, they are also addressed in this chapter.

The alternatives considered are compared using environmental, economic, and aviation factors to determine which of the alternatives will best fulfill the local aviation needs. With this information, as well as the input and direction from local government agencies and airport users, a final airport concept can evolve into a realistic development plan.

DO NOTHING ALTERNATIVE

In analyzing and comparing the costs and benefits of various development alternatives, it is important to consider the consequence of no future development at Buckeye Municipal Airport. The "do nothing" alternative essentially considers keeping the airport in its present condition and not providing for any type of improvement to the existing facilities. The primary result of this alternative would be the inability of the airport to satisfy the projected aviation demands of the airport service area.

The airport's aviation forecast and the analysis of facility requirements indicates both a current and future need for development of a longer runway, increased runway capacity, additional taxiways, improvement of navigational aids, and additional hangar and apron space. Without these facilities, regular users of the airport will be constrained from taking maximum advantage of the airport's air transportation potential.

The unavoidable consequence of the "do nothing" alternative would involve the airport's inability to attract future airport users and securing its retention of existing users and tenants.

Corporate aviation plays a major role in the transportation of business leaders. Thus, an airport's facilities are often the first impression many corporate officials will have of the community. If the airport does not have the capability to meet hangar, apron, or airfield needs of potential users, the area's capabilities to attract business that rely on air transportation will be diminished.

The long-term consequences of the "do nothing" alternative extends beyond the immediate town limits for the Buckeye area. Buckeye Municipal Airport is part of a system of public airports in Maricopa County that serve the aviation needs of the region. Specifically, the Buckeye Municipal

Airport serves the aviation needs of the western Phoenix metropolitan area. Because of the large aviation demand within the Phoenix metropolitan area, facilities such as Buckeye Municipal Airport, Glendale Municipal Airport, and Goodyear Airport, serve the western portion of Phoenix to relieve congestion at other general aviation and commercial service airports in the area. General aviation airports not only provide convenience to general aviation users, but also help to avoid a large number of smaller general aviation aircraft inter-mixed with large commercial aircraft at a single airport.

An overall impact of this alternative would be the inability to attract new users. Buckeye Municipal Airport has much to offer in terms of airfield and landside facilities. Without regular maintenance and additional improvements, potential users, future business enterprise for the Buckeye area, and even the western Maricopa County region could be lost.

The "no-build" development proposal at Buckeye Municipal Airport could adversely affect the long-term viability of the airport and the community; therefore, this alternative is not considered to be prudent or feasible.

TRANSFER AVIATION SERVICES

The alternative of shifting aviation services to another existing airport was found undesirable due to the lack of available airports having the facilities or the potential that Buckeye Municipal Airport provides. As growth continues towards the west, Buckeye Municipal Airport will become an attractive aviation facility as areas surrounding other western Maricopa County airports such as the Glendale Municipal and Phoenix Goodyear Airports become increasingly urbanized. In fact, the **1996 MAG RASP Implementation Study** indicates that annual operations at these airports are forecast to exceed their operational capacity (Annual Service Volume) by 2015. For this reason, it is likely that Buckeye Municipal Airport will be increasingly utilized in order to relieve congestion at these airports.

Furthermore, the continuing growth of employers in the area as well as a planned golf and residential community demonstrates the need for a highly functional airport. General aviation airports play a major role in the way companies conduct their business. Buckeye Municipal Airport is expected to accommodate business aircraft traffic for companies located or conducting business in the Buckeye area. This role is not easily replaced by another existing airport in the system without tremendous expense.

CONSTRUCTION OF A NEW AIRPORT SITE

The alternative of developing an entirely new airport facility to meet Buckeye's aviation demands was also considered, but similarly found to be an unacceptable alternative primarily due to the economic and environmental considerations.

Once an auxiliary airfield, the Buckeye Municipal Airport was acquired from Luke Air Force Base by the State of Arizona in 1949. The acquisition of the facility by the Town of Buckeye in 1960 provided the town and the region with an inexpensive solution for accommodating the local aviation needs.

Analysis in the previous master plan considered nine alternative sites (one being the existing airport site) for the relocation of the airport. Utilizing a site screening criteria method, each site was rated according to several factors. The results of the site analysis study indicated that the existing airport site was the best location in the area capable of accommodating forecasted activity over the planning period.

Although major urban and industrial/ commercial development has not yet reached the airport area, land acquisition, site preparation and the construction of an entirely new airport near an urbanized area can be a very difficult and costly action. In addition, closing Buckeye Municipal Airport would mean the loss of a substantial investment in an important transportation facility. In a situation where public funds are limited, the replacement of a functional and expandable airport facility would represent an unjustifiable loss of a significant public investment.

From the social, political, and environmental standpoints, the commitment of a new large land area must also be considered. The public sentiment toward new airports in the last few years has been very negative, primarily because a new airport normally requires the acquisition of several large parcels of privately-owned property. The development of a new airport similar to Buckeye Municipal Airport would likely take a minimum of ten years to become a reality. In addition, the potential exists for significant environmental impacts associated with disturbing a large land area when developing a new airport site.

Overall, transferring service to an existing airport in the region or to an entirely new facility are unreasonable alternatives that should not be pursued. Buckeye Municipal Airport is fully capable of accommodating the long term aviation demands of the area and should be developed in response to those demands. The airport has the potential to continue to develop as a quality general aviation airport that enhances the economic development of the community.

AIRPORT DEVELOPMENT ALTERNATIVES

A commitment to remain at the existing site and develop facilities sufficient to meet the long-range aviation demands entails the following requirements:

- Provide sufficient airside and landside capacity to meet the long range planning horizon level demand of the area.
- Develop the airport in accordance with the currently established FAA criteria.

The Facility Requirements Chapter outlined specific types and quantities of facilities necessary to meet projected aviation demands throughout the planning period. Expansion will be required to meet the long range planning horizon level of demand. The remainder of this chapter will describe various alternatives for the airfield and landside facilities.

ALTERNATIVE EVALUATION CRITERIA

The analysis will evaluate each alternative based on the following factors.

- Airport Capacity: The runway configurations affect on-airport capacity in the long range planning period.
- Compatibility: The impact land acquisition and aircraft overflights will have on existing and future land use.
- Ground Access: The ground transportation and pilot/passenger access demands.
- Landside Efficiency: The configuration of the landside facilities to serve the terminal, FBO, and T-hangar areas without conflicting levels of activity operating together.

Before actual airfield and landside alternatives are presented, an understanding of the items which are factored into the development of the various alternatives is necessary.

Runways

Currently there are two areas of concern with Runway 17-35. The first is the need for additional runway length to accommodate the requirements the critical aircraft forecast to utilize the airport. Increasing the capacity of the airfield is a second concern.

Runway Length: Analysis in the previous chapter indicated that Runway 17-35 has adequate length for small airplanes, but falls short of the requirements for the full range of corporate aircraft including business jets which are forecast to utilize Buckeye Municipal Airport at least 500 times annually.

FAA runway length design criteria indicates the runway should measure 5,500 feet in order to accommodate 75 percent of business jets at 60 percent useful load. While this length is capable of serving 75 percent of the business jet fleet, it is likely that the full range of business jets could utilize the airport over the long range of the planning period. In order to accommodate the full range of business jet aircraft, the runway should be 7,300 feet.

Parallel Runway: As demonstrated by the demand/capacity analysis, Buckeye Municipal Airport is currently at 41.2 percent of the airfield's annual service volume (ASV). Forecasts

indicate that the airfield configuration will be at 70.7 percent of its ASV in the long range planning period. FAA Order 5090.3B **Field Formulation of the National Plan of Integrated Airport Systems (NPIAS)** indicates that improvements should be considered when operations reach 60 percent of the airport's ASV.

At Buckeye Municipal Airport, delays will increase exponentially as the airfield capacity nears its ASV. Operational safety both in the air and on the ground could be jeopardized without additional airfield improvements which would increase the airport's ASV. Because the runway, in the long range, is expected to be at 70.7 percent of its ASV, improvements which are necessary to accommodate future demand must include more than additional exit taxiways and a longer runway. These developments address only the short term fix which will not help relieve the airport's capacity problems. In order to meet the long range level of operational demand, the addition of another runway is necessary.

Wind data for the airport depicted by **Exhibit 3A** indicates the current runway configuration is adequate for the predominant winds. With this in mind, the existing need for additional runway capacity would not be satisfied by the addition of a crosswind runway. The airfield's annual service volume would increase only slightly because Runway 17-35 would remain the predominant runway orientation and used the highest percentage of the time.

In order to increase the runway's ASV to meet the operational demand level of the long range planning horizon, a parallel runway should be constructed. A parallel runway system would improve the airfield's capacity, provided adequate separation is available between the runways. The minimum acceptable separation is 700 feet, which will provide simultaneous operations during visual flight rule (VFR) conditions. Under instrument flight rule (IFR) conditions, 2,500 feet separation between runways is required for a simultaneous approach and departure or simultaneous departures.

Adequate capacity can be provided with a parallel runway capable of accommodating small general aviation aircraft during VFR conditions. Therefore, in order to meet the runway length requirements for smaller aircraft, the second runway should be 4,300 feet long. Thus, for planning purposes, the layout of a parallel runway 4,300 feet in length, located 700 feet from the existing runway is recommended.

With the addition of a parallel runway, the airfield's ASV increases to meet the long range level of demand providing enough length to accommodate 100 percent of anticipated aircraft. The parallel runway will primarily serve as a touch-and-go runway.

Taxiways

The existing parallel taxiway will be adequate to serve the demand levels of

the long range planning period. As the primary runway is extended, the parallel taxiway should be extended, as well. Two additional exit taxiways should be added with the projected extension. Also, construction of a parallel taxiway between the existing and planned parallel runway will be necessary to provide for adequate circulation and operational efficiency.

Helipad

Currently, Buckeye Municipal Airport does not have a helipad facility. Although there are no helicopters currently based at the airport, aircraft fleet mix forecasts indicate the potential for up to three helicopters basing at the airport. Also, as Phoenix continues to expand towards the west and areas surrounding the airport become urbanized, helicopter operations at the airport will likely increase. It is recommended that helicopter facilities be planned to meet this demand at Buckeye Municipal Airport. At a minimum, a paved area should be marked for use by helicopters. This area should be set away from aircraft tie-down areas and hangars. This will allow helicopters to approach, then hover taxi to their positions.

Navigational Aids

The evolution of global positioning system (GPS) technology has provided an inexpensive alternative for airports such as Buckeye Municipal Airport to be served by instrument approaches. Planning for a precision approach for the airport was recommended in the previous chapter. Because of airspace conflicts with Luke Air Force Base, the previous chapter indicated that a precision GPS approach for Runway 35 would be preferable. Also, Runway 17 should be planned to accommodate a GPS approach with at least one mile visibility. The planned parallel runway will be utilized primarily by training activity, thus, an instrument approach to this runway is not necessary.

All alternatives should provide a 34 to 1 approach to Runway 17, while providing for a 50 to 1 approach to Runway 35. Approaches to the proposed parallel runway should be planned for visual 20 to 1 approaches.

In order to implement a precision approach to Runway 35, a medium intensity approach lighting system with runway alignment indicator lights (MALSR) would be required.

The FAA requires a cleared 50 to 1 approach slope and a 400-foot wide cleared path along the extended centerline of the runway. FAA also requires the airport to control the 400-foot wide strip of land extending 2,400 feet from the runway end. If the airport owns all property within the runway protection zone (RPZ), this requirement will be met. FAA standards are set to ensure that the MALSR system is not obstructed to the pilots view while on final approach to the runway.

Parachute Operations Area

Desert Sky Diving currently operates from a conventional hangar and aircraft parking apron just north of Butler Street, northeast of the terminal area. This operator utilizes an area immediately adjacent to its leasehold as a parachute landing site. As aircraft activity and industrial/commercial space requirements increase at the airport, a new site for the landing area and/or the operator will be needed. At such time, consideration should be given to either moving the drop site off-airport and shuttling parachuters back to the airport, or moving the parachute operation to another, less congested airport.

Ultralight Aircraft Operations Area

The airport is utilized on a regular basis by approximately nine ultralight aircraft. Currently, these aircraft are operating on the east side of the airfield on a section of the now abandoned Runway 16-34. At this time, ultralight aircraft operations at the airport can be accommodated on the east side of the runway.

As operations (especially by corporate aircraft) and need for additional space on the east side of the airport warrant, consideration should be given to an alternative area for ultralight aircraft operations. The alternate area may be on or off-airport, depending upon current space utilization and consideration of airport activity. It is recommended, however, for safety and efficiency that minimum standards of operation procedure be developed so to minimize conflicts between ultralight and higher powered aircraft.

AIRFIELD ALTERNATIVES

Airfield Alternative A

Exhibit 4A depicts the layout of a 3,000-foot northerly extension of Runway 17-35 and the layout of a 4,300 feet by 75 feet parallel runway. This extension would place the north end of the runway approximately 50 feet south of Yuma Road. In order to accommodate FAA approach clearance standards, the road would need to be relocated so that aircraft on a 34 to 1 approach slope could clear the road by at least 15 feet. The road must, therefore, lie at a minimum of 510 feet north of the runway end. FAA design standards also require a cleared runway object free area (OFA). It is evident from the illustration that extending the runway to the north would leave the runway with inadequate OFA.

The runway OFA is defined in FAA Advisory Circular 150/5300-13 Change 4, **Airport Design**, as an area centered on the runway extending out in accordance to the critical aircraft design category utilizing the runway and the approach minimums supported by the runway. The OFA must provide clearance of all ground based objects protruding above the runway safety area (RSA) edge elevation unless the object is fixed by function serving air or ground navigation.

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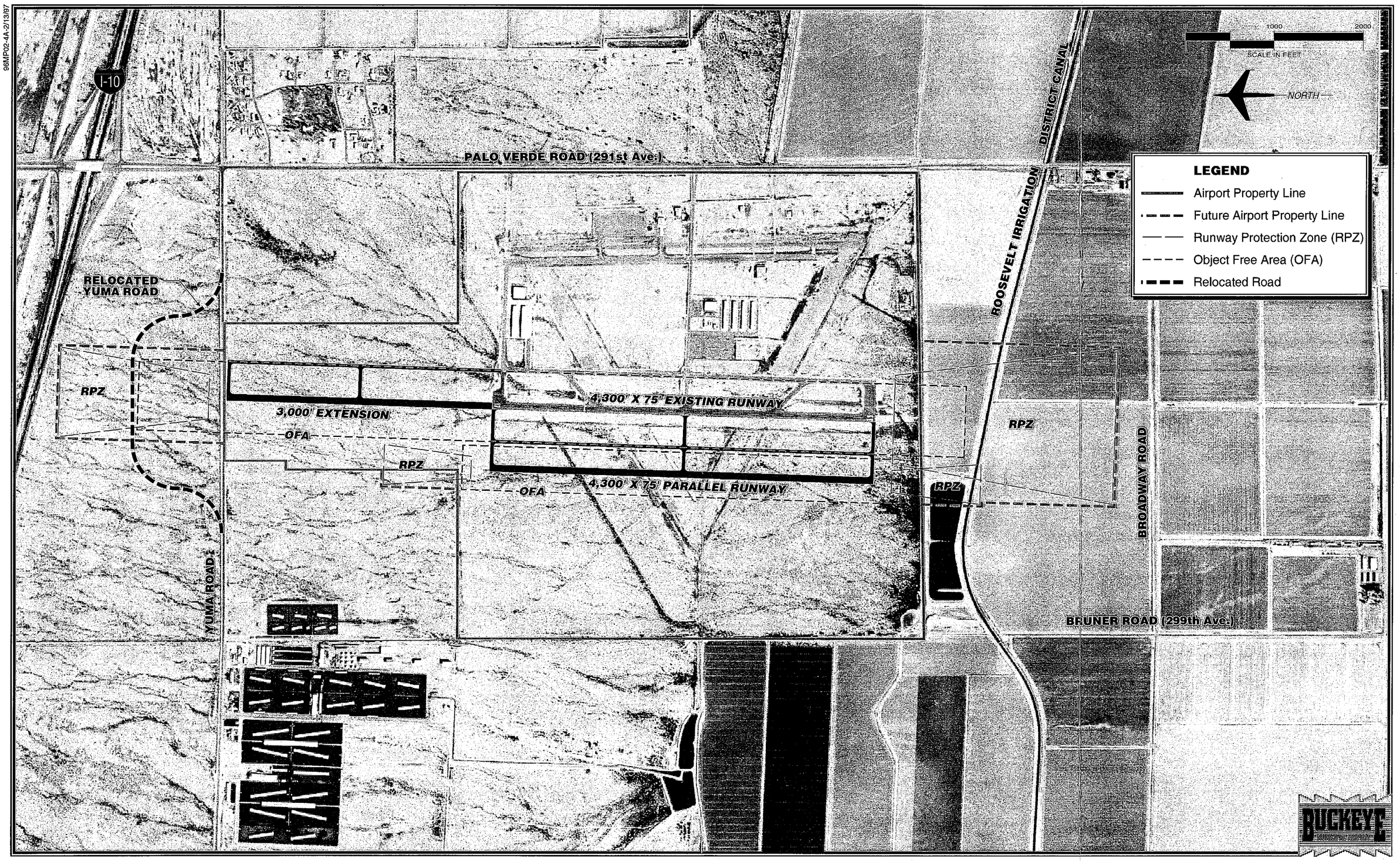

Exhibit 4A
AIRFIELD ALTERNATIVE A

Runway 35 has been planned to provide precision instrument approach. Precision approach minimums would aid in attracting businesses which rely upon air transportation to the airport. In order to meet design standards for the critical aircraft at Buckeye Municipal Airport, the runway OFA for existing Runway 17-35 would be required to be 800 feet wide and extend 1,000 feet beyond both ends of the runway.

Furthermore, height restrictions surrounding airports established by FAR Part 77 Regulations indicate that the runway should provide a cleared primary surface, and transitional surface. The primary surface for Runway 17-35 would require a cleared area of 500 feet on each side of the runway centerline. Transition surface requirements stipulate clearing objects from the primary surface outward at a slope of seven horizontal feet to every vertical foot.

Also shown on the exhibit are the runway protection zones (RPZ) corresponding to a precision instrument approach (Runway 35), non-precision approach to Runway 17, and visual approaches to both ends of the proposed parallel runway. According to FAA design standard criteria (A/C 150/5300-13, Chg 4) the function of the RPZ is to ensure safe approaches to the end of the runway by providing an area free of incompatible objects and activities. The FAA requires the purchase of land falling within the RPZ boundaries, or if the land cannot be purchased, avigational easements must be acquired to ensure safe approaches to the runway.

Because Runway 35 is planned for a precision GPS approach, Yuma Road would need to be relocated outside the runway OFA (at least 1,000 feet beyond the runway end), but may stay within the RPZ. The relocation of Yuma Road outside the OFA is depicted on **Exhibit 4A**. Relocation of Yuma Road would cost approximately $310,000.

Approximately 76 acres of land to the north would need to be acquired for the Yuma Road relocation, OFA requirements, and areas falling under the RPZ. Approximately 84 acres of land would need to be acquired for the OFA and RPZ requirements to the south. Total required land acquisition was estimated at $2.8 million.

Total runway, taxiway, and airfield lighting costs included in the alternative is approximately $5.0 million. The total cost of the runway extension, land acquisition and Yuma Road relocation required by this alternative is estimated at $8.0 million.

Advantages: This alternative provides the runway length and airfield capacity improvements necessary to accommodate the demand levels of the long range planning horizon. By extending the runway to the north, a staged extension could be employed. The fist stage would be extending the runway to 5,500 feet which would meet the demands of the majority of corporate aircraft. The first stage would not require land acquisition or the relocation of Yuma Road.

Disadvantages: The northerly extension requires the acquisition of prime, and relatively expensive property. The land purchased for protection of the RPZ would leave very attractive and developable property unusable, or underutilized. The end of Runway 17 would be moved further from the terminal area requiring longer taxi distance.

Airfield Alternative B

Exhibit 4B depicts an alternative providing the full 3,000-foot runway extension to the south. As with the previous alternative, the OFA's and RPZ's associated with each runway is also depicted.

The extension would require either re-routing or bridging the Roosevelt Irrigation District Canal. This is a major trunk canal supporting irrigation needs in the region. The cost associated with re-routing the canal is not the only factor. The layout of the canal was produced in a manner to best supply farmland near the airport with water. In order to meet FAA standards, the canal would need to be re-routed around the runway OFA. The canal must also be designed to carry the same gradient so as to accommodate the gravity supply system of the area. Also, re-routing will cause the need for additional modifications to supply channels in other areas adjacent the airport. Thus, re-routing the canal was not considered a viable alternative.

Another option would be bridging the canal. Two bridges spanning between the runway safety area (RSA) and the taxiway safety area of the parallel taxiway would need to be constructed. A bridge is estimated to cost $50 per square foot. Thus, total cost to bridge the runway would be approximately $1,740,000.

The canal is supported on either side by a ten-foot high levee. Because the terrain at the foot of the canal is approximately ten foot below the existing runway end elevation, extensive ground fill would be needed. Additional earth work would also be necessary south of the canal. Approximately 450,000 cubic yards of fill would be needed to bridge the canal.

As with the previous alternative, property acquisition would be necessary; however, this alternative would not require any land acquisition to the north. Approximately 210 acres of land south of the runway would be recommended for purchase. Land acquisition costs were estimated at $1.26 million.

This alternative would also require the relocation of Broadway Road as it would lie in the runway OFA. Because re-routing the roadway would cost more than simply improving the farm road to the south, re-routing the road was not considered. Improvement of the farm road was estimated at $500,000.

Preliminary cost estimates for runway/taxiway construction, land acquisition, bridging the Roosevelt Irrigation District Canal, and relocation of Broadway Road, as illustrated on **Exhibit 4B**, totaled $11.9 million.

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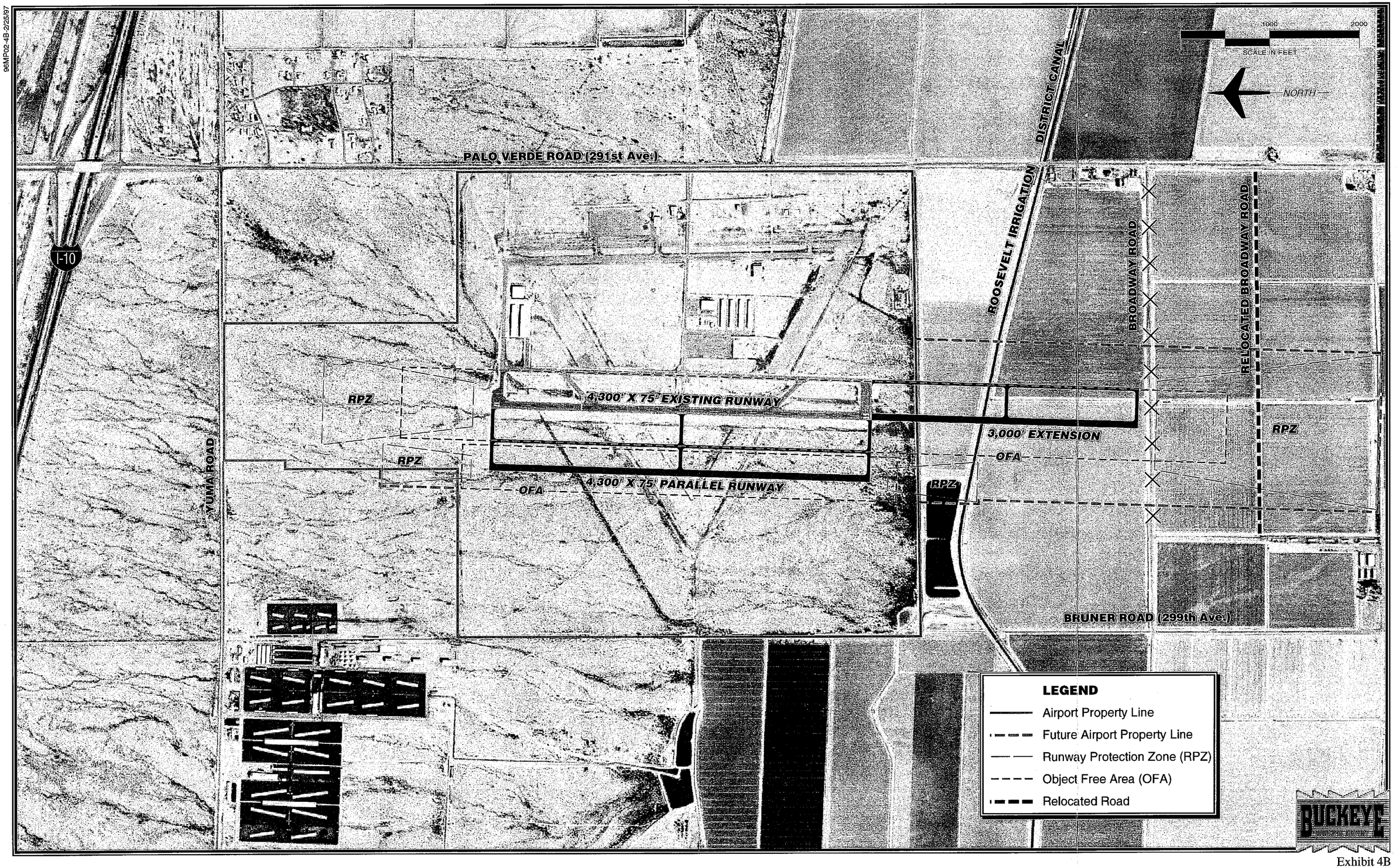

Exhibit 4B
AIRFIELD ALTERNATIVE B

Advantages: This alternative provides adequate runway length and airfield capacity for the demand levels of the long range planning horizon. Acquisition of property to the north is not necessary, leaving the property for non-aviation development.

Disadvantages: This alternative requires the purchase of a large section of property to the south which is currently utilized for agricultural purposes. Also, this alternative does not lend itself to ease of staging. The previous alternative allowed for the interim 1,200-foot extension without the need for additional property purchases, while this alternative would require immediate land acquisition and bridging of the Roosevelt Irrigation District Canal. Also, the end of Runway 35 is moved further from the terminal area requiring longer taxi distance.

Airfield Alternative C

The final airfield alternative, illustrated in **Exhibit 4C**, depicts extending the runway 1,200 feet to the north and 1,800 feet to the south. The runway OFA's and RPZ's are also depicted.

As illustrated on the exhibit, the RPZ for Runway 17 would extend just to the north of Yuma Road. It is likely that the RPZ would fall within the right-of-way for the road and land would not need to purchased. If it falls outside of the right-of-way, however, an easement providing clearance for the 34 to 1 approach would be recommended.

As with the previous alternative, the southerly extension would require bridging the Roosevelt Irrigation District Canal at a cost of $1.74 million. Although land acquisition to the north would not be necessary, approximately 159 acres to the south would need to be acquired. Total land acquisition costs were estimated at $954,000. Total costs associated with the extension of the runway/taxiway system, land acquisition, and bridging the canal would be approximately $9.7 million. **Table 4A** presents a summary of costs associated with each alternative.

Advantages: This alternative provides adequate runway length and airfield capacity while allowing for staged development. The 1,200-foot northerly extension could be provided first, in order to serve the majority of corporate aircraft projected to utilize the airport. The southerly extension in this alternative would require less property acquisition and would not require replacing Broadway Road as required by Alternative B.

Property to the north can be developed for non-aviation use. This alternative provides the best layout while costing the least. The combination of north and south extensions provided by this alternative allows for each of runway ends to remain closer to the terminal area. This provides the best alternative for minimizing taxi distances.

Disadvantages: Bridging of the irrigation canal would be necessary and

a large section of land to the south would need to be acquired. This alternative also impacts irrigated farmland.

TABLE 4A
Runway Extension Alternative Comparative Costs
Buckeye Municipal Airport

	Alternative A	Alternative B	Alternative C
Extend and Widen Runway	$2,500,000	$2,500,000	$2,500,000
Extend Parallel Taxiway (add exits)	895,000	895,000	895,000
Airfield Lighting & Marking	290,000	290,000	290,000
Road Relocation Cost	310,000	500,000	N/A
Bridge Roosevelt Canal	N/A	1,740,000	1,740,000
Additional Earthwork (Barrow)	N/A	2,250,000	1,250,000
Subtotal	$3,995,000	$8,175,000	$6,675,000
Engineering & Contingencies	$1,200,000	$2,450,000	$2,000,000
Total Construction Costs	$5,195,000	$10,625,000	$8,675,000
Land Acquisition (in acres)			
North	76	0	0
South	84	210	159
Total Land Acquisition	160	210	159
Estimated Land Acquisition Cost	$2,785,000	$1,260,000	$954,000
Total Development Cost	$7,980,000	$11,885,000	$9,629,000

LANDSIDE ALTERNATIVES

Terminal Area

The orderly development of the airport terminal area can be the most critical and most difficult development to control on the airport. Many airports have been developed without proper planning in regards to the functional elements to be served. A terminal area development approach of taking the path of least resistance can be disastrous to the long term viability of the airport. Allowing operators and tenants to develop wherever they please without regard to a functional plan will result in a haphazard array of buildings and small ramp areas, which will eventually preclude the most efficient use of the valuable space along the flight line.

Activity in the terminal area at Buckeye Municipal Airport can be divided into three areas. The high activity area is that providing aviation services on the airport (i.e. aircraft parking apron, fueling, etc.). The aircraft parking apron provides for outside storage of

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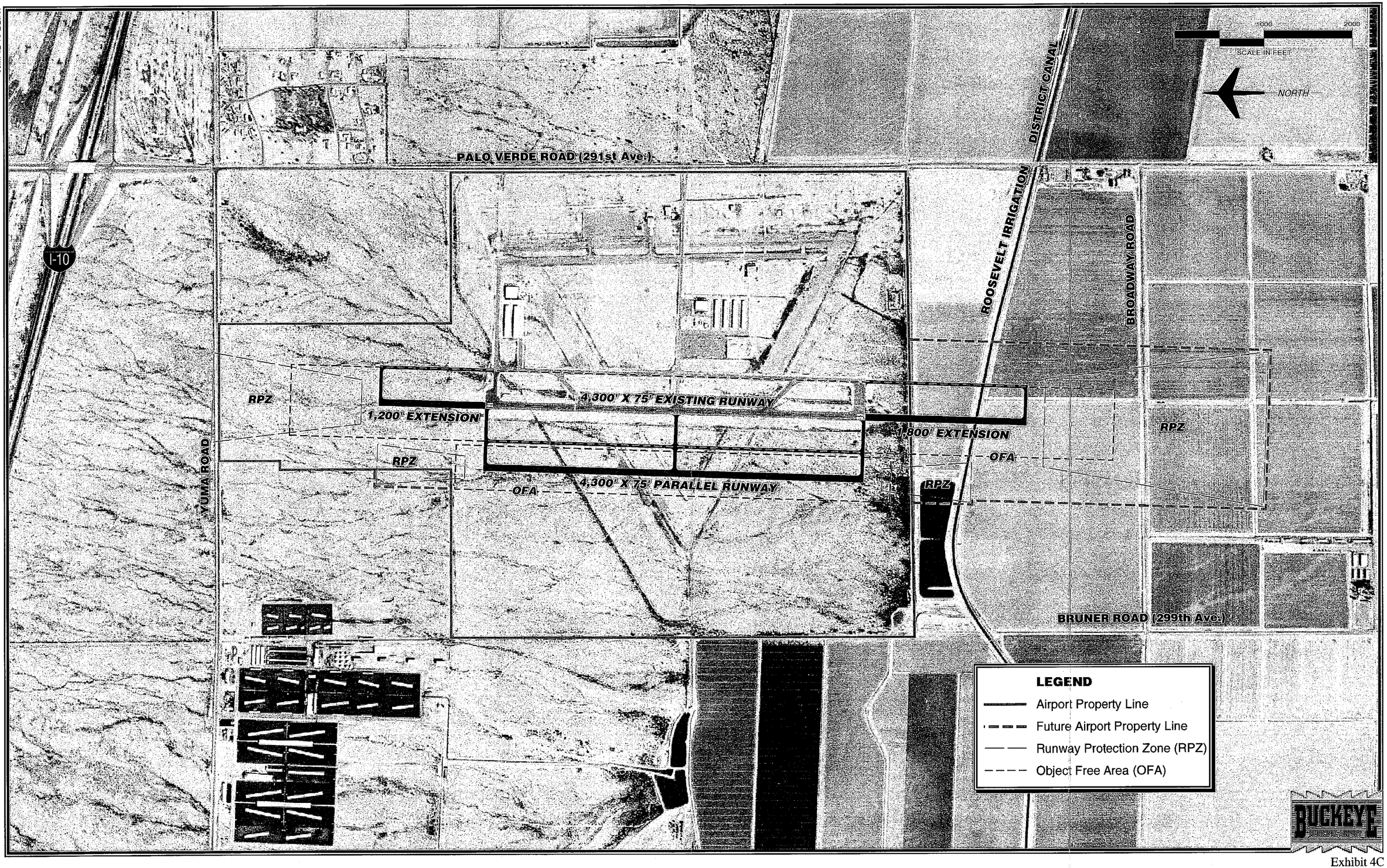

Exhibit 4C
AIRFIELD ALTERNATIVE C

aircraft and circulation of aircraft. In addition, large conventional hangars housing corporate aviation departments or storing a large number of aircraft would be considered a high activity use. A conventional hangar structure in the high activity area should be a minimum of 10,000 square feet. The best location for high activity areas is along the flight line near midfield for ease of access to all areas of the airfield.

The medium activity area defines the next level of airport use and primarily serves smaller corporate aircraft that may desire their own conventional hangar storage on the airport. A conventional hangar structure in the medium activity use area should be at least 50 by 50-feet or a minimum of 2,500 square feet. The best location for medium activity use is off of the immediate flight line but readily accessible. The area should have access to parking and utilities.

Low activity use defines the area for storage of smaller single and twin-engine aircraft. Low activity uses are personal or small business aircraft owners who prefer individual space in T-hangars for aircraft storage. Low activity area should be located in less conspicuous areas. This use category requires electricity but generally does not require water or sewer utilities.

In addition to the functional compatibility of the terminal area, the proposed development concept should provide a first class appearance to Buckeye Municipal Airport. Consideration to aesthetics should be given to the entryway as well as public areas when arranging the various activity areas. Architecturally pleasing buildings should be featured in these areas when possible.

Currently, the terminal area is configured in an ideal manner. T-hangar development is grouped away from high activity areas along the aircraft parking apron. It is recommended that future T-hangar construction follow the existing layout and expand to the south. Future conventional and corporate hangars as well as aircraft parking apron should be developed to the north.

Fuel Facilities

The previous chapter indicated that an additional 10,000-gallon storage facility for 100LL Avgas and 20,000-gallon facility for Jet A fuel. In order to accommodate ultimate storage requirements, the existing fuel tanks in the fuel farm could be replaced with larger tanks or additional fuel tanks could be constructed adjacent the existing fuel farm.

Industrial/ Commercial Development

Current airport property encompasses a large amount of underutilized land. Similar to most general aviation airports, revenues generated by activity at the airport will not cover operation and development costs. For this reasons, a number of publicly-owned general aviation airports are developing available land for industrial/commercial

purposes, both aviation and non-aviation related. Aviation-related development could include small aircraft hangars and/or aircraft parts manufacturers, specialty shops, etc.

Given the prime location of the airport in relation to I-10, airport property adjacent Palo Verde Road would be ideal for support of non-aviation related commercial/industrial development such as hotels, fast food chains, manufacturing plants, etc. Thus, ultimate industrial/commercial development of underutilized property or property not required to meet long range aviation demand levels should be considered.

Preferred Landside Development Alternative

With a vast amount of developable space, the number of hangar, apron, parcel configurations are endless. Because the previous master plan provided for similar needs and utilized the same alternative selection criterion, the previous plan was analyzed. It was determined that the previous plan would be adequate with a few modifications. The preferred landside development alternative is depicted on **Exhibit 4D**.

As depicted on the exhibit, future T-hangar expansion (seven facilities) is provided to the south. Additional conventional hangar and apron space is provided to the north. Improved aircraft access is afforded to the terminal area with the addition of connecting taxiways near the T-hangar area and a taxiway running from the existing apron to Taxiway Echo.

Also depicted on the exhibit is the layout of numerous aviation and non-aviation related commercial/industrial parcels. The proposed aviation-related parcels lie adjacent to Taxiway Echo, east of the existing terminal area. The parcels range in size between 2.5 and 6.5 acres. The smaller parcels could be utilized by corporate operators wanting individual corporate hangar space, while the larger parcels could be utilized by specialty shops, FBO's, training operators, aircraft manufacturers, etc. The aviation related parcels are afforded airfield access by two taxiways which connect to Taxiway Echo for the northern parcels and Taxiway Alpha for the southern parcels.

The exhibit also depicts non-aviation related parcels along Palo Verde Road. The parcels which lie north of Butler Street are five acres in size and the parcels south of Butler Street are ten acres. These parcels would be ideal for industrial/commercial development needing local and regional access. These parcels are provided automobile access from Palo Verde Road and access roadways which lie to the west.

The parceled layout of the commercial/industrial areas are suggested sizes. The need for smaller or larger parcels could dictate resizing to meet the specific requirements of potential users.

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Exhibit 4D
PREFERRED LANDSIDE
DEVELOPMENT ALTERNATIVE

SUMMARY

The process utilized in assessing the airside and landside development alternatives involved a detailed analysis of short and long-range requirements. Current airport design standards were considered at every stage of development. Safety, both air and ground, were given a high priority in the analysis of alternatives.

Through further discussions with the Planning Advisory Committee, a recommended concept will evolve. The development plan for Buckeye Municipal Airport must represent a means by which the airport can evolve in a balanced manner, both on the airside and landside, to accommodate the forecast demand. In addition, the plan must provide for flexibility to meet activity growth beyond the long range planning horizon.

The following chapters will be dedicated to refining the basic concept into a final plan with recommendations to ensure proper implementation and timing for a demand-based program.